

AIWA®**SERVICE
MANUAL**

**DX-M55
DX-M55A
DX-M88
DX-M88A**

COMPACT DISC PLAYER

• BASIC CD MECHANISM : 3XC-M1

- TYPE. H, U, C, G (DX-M55/M55A)
- TYPE. Y (DX-M88/M88A)

	H	HJ	U	C	G	Y	YU	YJ
DX-M55 (Cannot handle 8cm CD)	●							
DX-M55 (Can handle 8cm CD)		●	●	●	●			
DX-M55A (Can handle 8cm CD)	●							
DX-M88 (Cannot handle 8cm CD)						●		●
DX-M88 (Can handle 8cm CD)							●	
DX-M88A (Can handle 8cm CD)						●		●

SPECIFICATIONS

Type:	Compact disc digital audio system	Power and Miscellaneous
Disc:	Compact disc	Power supply:
Scanning method:	Non contact optical scanner (semiconductor laser application)	DX-M55H AC 120V/220V/240V, 50/60 Hz DX-M55G AC 240V, 50/60 Hz DX-M55U, C AC 120V, 60 Hz
Laser:	Semiconductor laser ($\lambda=780$ nm)	Power consumption:
Rotation speed:	Approx. 500 rpm—200 rpm (CLV)	DX-M55H, G 9W DX-M55U, C 9W
Error correction:	Cross Interleave, Reed Solomon Code	Dimensions: DX-M55H, G, U, C 360(W) x 85(H) x 314(D)mm DX-M88 360(W) x 85(H) x 314(D)mm
No. of channels:	2 channels	Weight: DX-M55H, G, U, C 3.7 kg DX-M88 3.2 kg
D-A conversion:	16-bit linear	
Frequency response:	4 Hz—20 kHz \pm 1.0 dB	
Harmonic distortion:	0.04% (1kHz, 0 dB)	
Dynamic range:	90 dB	
Channel separation:	82 dB (1kHz, 0 dB)	
S/N Ratio:	95 dB	
Wow/Flutter:	Unmeasurable	

Disc specifications

Playing time:	Approx. 60 minutes (max. 74 minutes)
Dimensions:	Diameter 120 mm, Thickness 1.2 mm
Track pitch:	1.6 μ m
Sampling frequency:	44.1 kHz

- Design and specifications are subject to change without notice.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING !!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Cautions when servicing

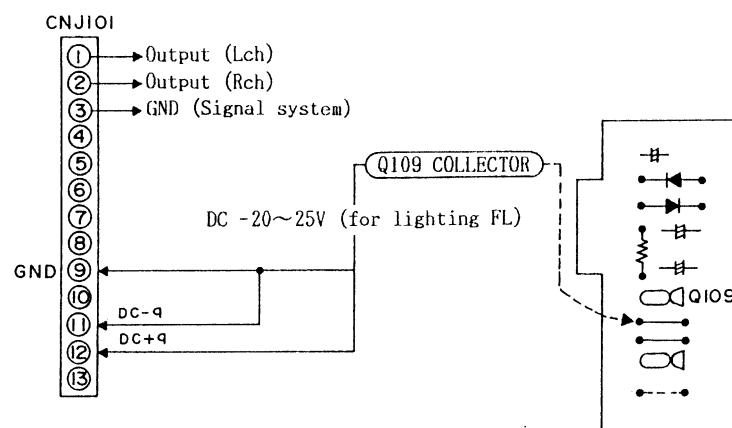
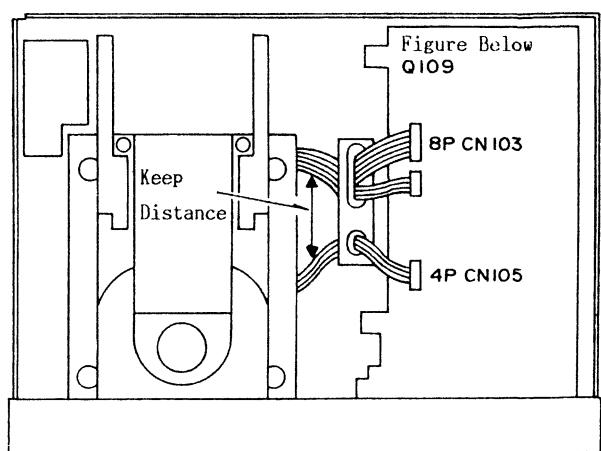
Lay out the wires of CN103 (8-Pin) and CN105 (4-Pin) as far as possible.

If the signal supplied to the focus coil and tracking coil enters the wire of the photodiode in the optical pickup, sound may skip or play may not be possible.

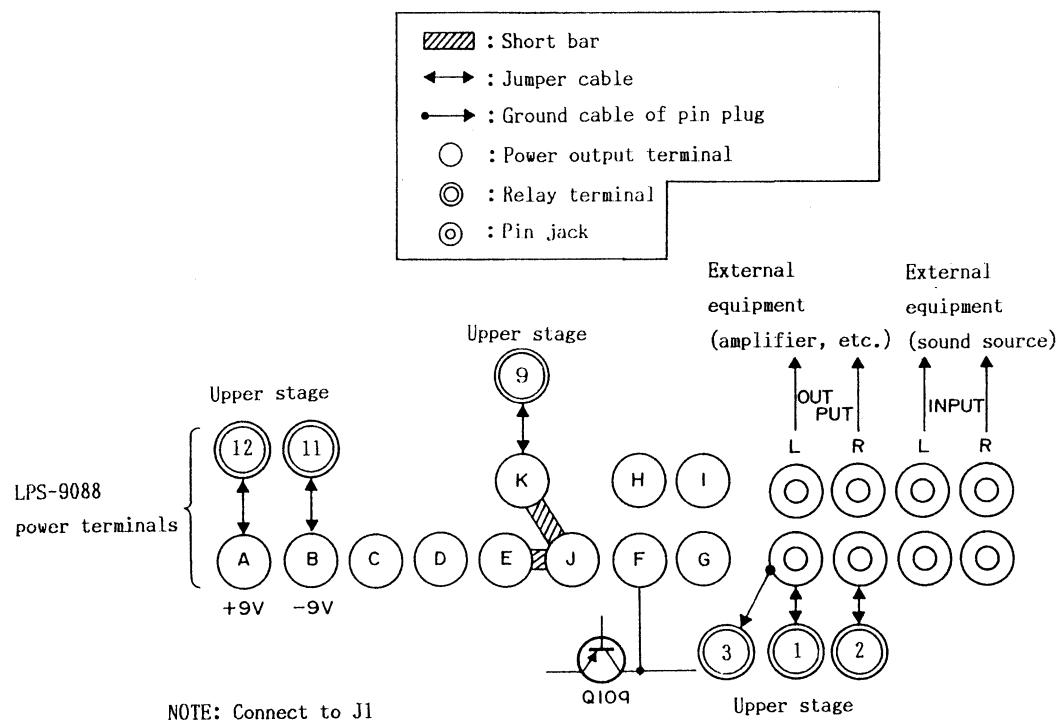
1. Models DX-M88 do not have a power transformer and power is supplied to them from the CX-S88 via a 13-pin flat cable. When servicing DX-M88, connect it to the CX-S88 for the power supply. If you do not have the CX-S88, perform the following procedure.

(When servicing the un-assembled DX-M88)

- ① 13-pin flat cable from an external power supply.



- ② Connection diagram when using Multi-Power Supply (LPS-9088)



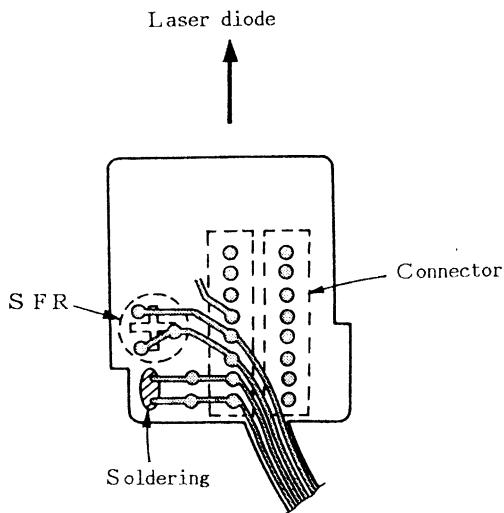
DISASSEMBLY INSTRUCTIONS

1. Cautions when replacing the optical block. (KSS-152A)

The laser diode in the optical block may be broken by static electricity when a potential difference occurs due to static electricity, etc. charging the clothes and human body.

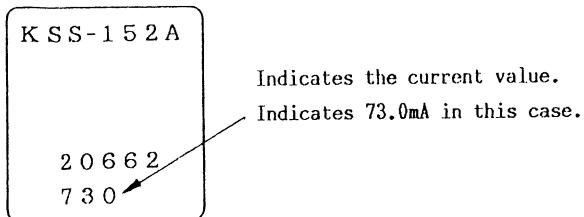
Ground workers and work benches and take care that clothes do not touch the laser diode.

- 1) After replacing the optical pickup, insert the connectors firmly fully on both the pickup and circuit board sides. If the connector is not inserted firmly, the laser diode may break down.
- 2) After connecting the connector, remove the solder shown in the figure below.



2. Checking the laser diode

- 1) Read the current value on the label pasted on the optical pickup. (Label pasted on the pickup)



The current is different for different units.

- 2) Turn the power switch on.
- 3) Measure the voltage across R506 10Ω.

$$I_{OP} = \frac{V_{R506}}{R_{506}} = \frac{V_{R506}}{10\Omega}$$

1. Main Circuit Board Removal

- 1) Remove 3 screws and take out the main circuit board in the direction of the arrow. (See Fig. 1)

Note: The main circuit board is connected to the front circuit board through the connectors.

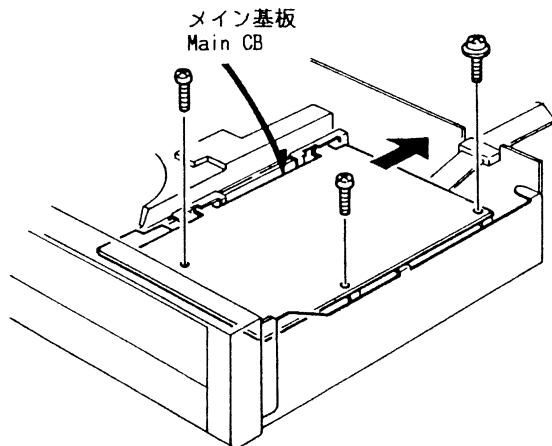


Fig. 1

2. Front Cabinet Removal

- 1) Lift up the disc holder and pull out the tray to the front.
- 2) Pull the bottom of the joint CD to the front and remove it in the direction of the arrow.
- 3) Remove 5 screws. (See Fig. 2)

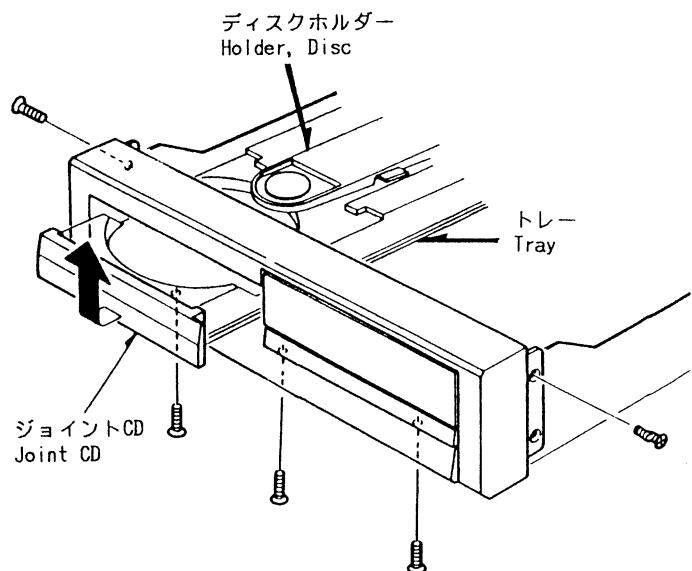
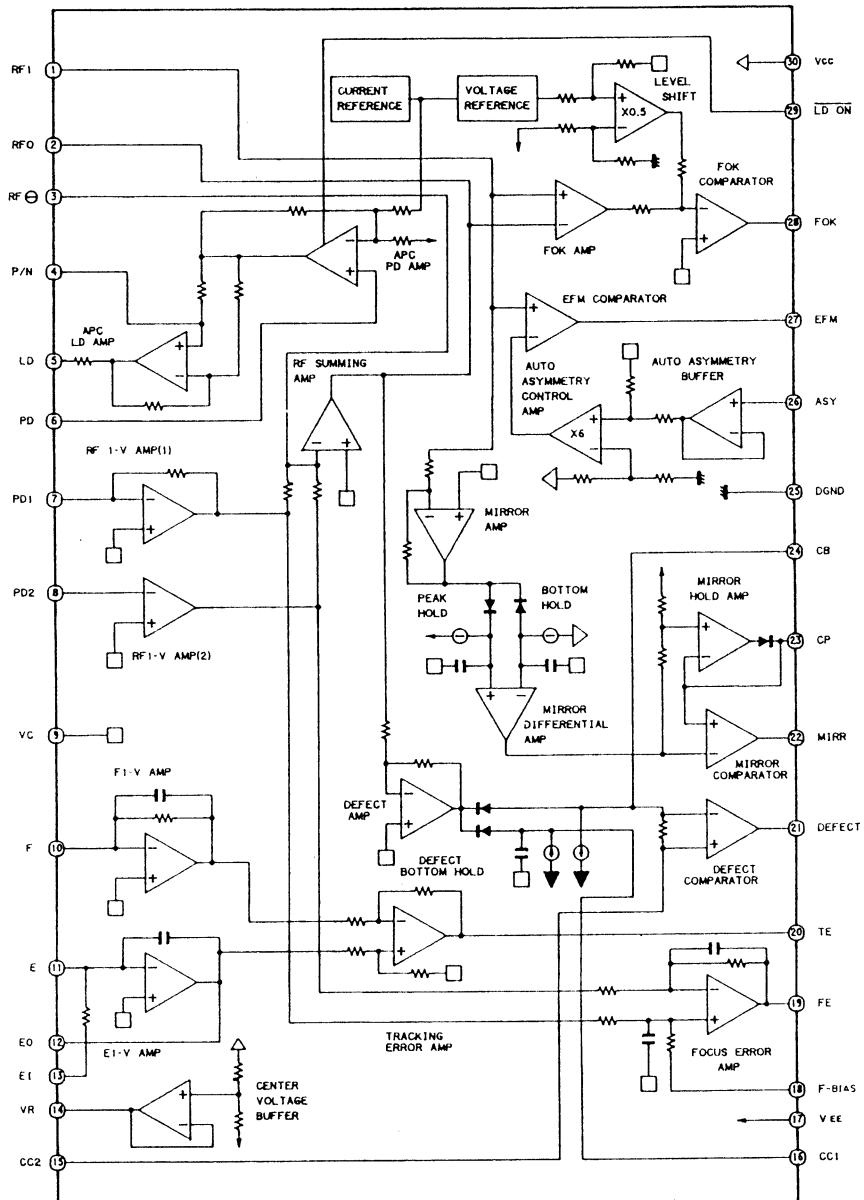


Fig. 2

IC DESCRIPTION

1. IC, CXA1081M

1-1. Pin Name



The arrow at each pin shows signal in/out.

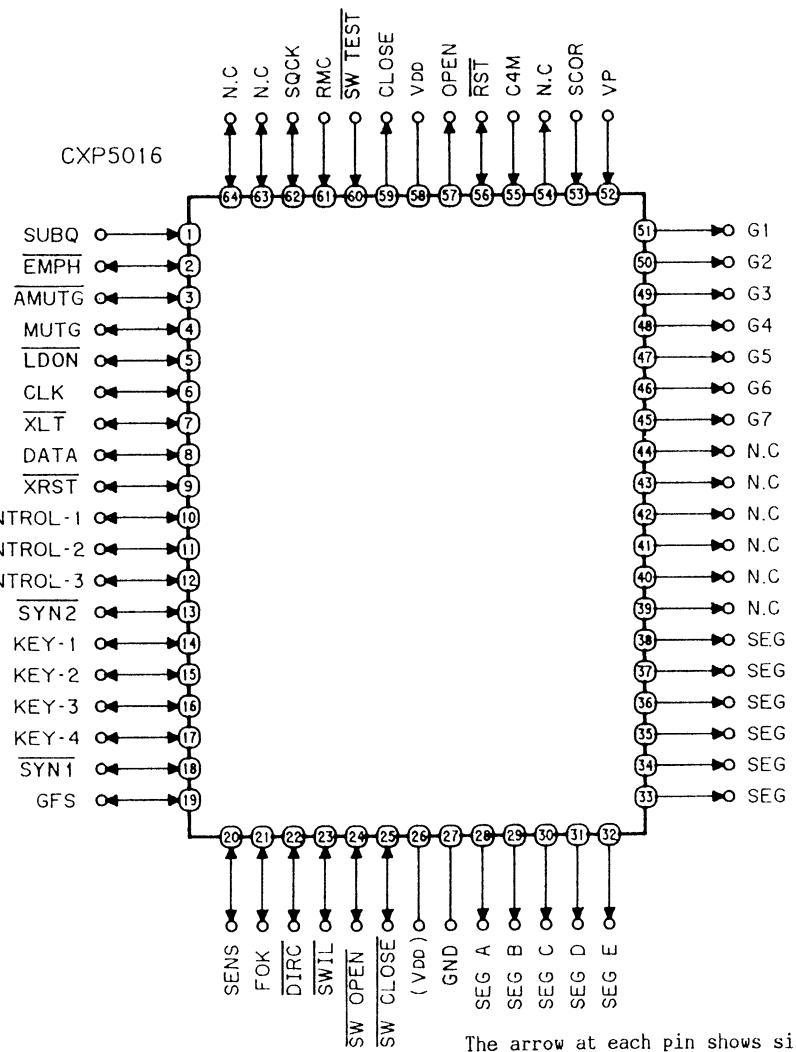
1-2. Pin Description

Pin No.	Pin Name	I/O	Description
1	RF 1	I	The RF summing amplifier output is C-connected and input.
2	RF 0	O	RF summing amplifier output. Eye pattern test point.
3	RF -	I	Inverting input of the RF summing amplifier. A feedback resistor is connected between pins 2 and 3.
4	P/N	I	Switches the input according to the polarity of the laser diode.
5	LD	O	Output to control the laser diode output.
6	PD	I	Connects the photo-detector which detects the laser diode output.
7	PD 1	I	RF 1 - V amplifier (1) inverting input. Connected to PIN diode A + C for the current input.

Pin No.	Pin Name	I/O	Description
8	PD 2	I	R F 1 - V amplifier (2) inverting input. Connected to P I N diode B + D for the current input.
9	V C	I	Reference voltage input within the I C. Connected to pin 14 with single power supply. Connected to the ground with the positive and negative power supply.
10	F	I	F 1 - V amplifier inverting input. Connected to P I N diode F for the current input.
11	E	I	E 1 - V amplifier inverting input. Connected to P I N diode E for the current input.
12	EO	O	E 1 - V amplifier output. A feedback resistor is connected.
13	E 1	I	Adjusts the E 1 - V amplifier gain.
14	VR	O	Outputs the neutral voltage. Connected to pin 9 with the single power supply. OPEN with positive and negative power supply.
15	CC 2	O	Defect bottom hold (1) output. A capacitor is connected between pins 15 and 16 .
16	CC 1	I	The defect bottom (1) output is C-connected and input.
17	VEE	-	Grounded with the single power supply. Becomes a negative power supply with the positive and negative power supply.
18	FE BIAS	I	Inputs a bias voltage for the positive-phase input of the focus error amplifier.
19	FE	O	Focus error amplifier output.
20	TE	O	Tracking error amplifier output.
21	DEFECT	O	Defect detection output. Outputs the "H" signal that detects a defect on the mirror surface.
22	MIRR	O	Mirror comparator output.
23	CP	O	A mirror hold capacitor is connected to this pin.
24	CB	O	The defect bottom hold (2) capacitor is connected to this pin.
25	D GND	-	Ground in the digital circuit.
26	ASY	I	Auto-symmetry control input.
27	EFM	O	EFM output comparator output.
28	FOK	O	Focus OK output.
29	LD ON	I	Laser diode ON/OFF control input.
30	VCC	-	Positive power supply.

2. IC, CX P5016H234Q (or CX P5016H207Q)

2-1. Pin Name



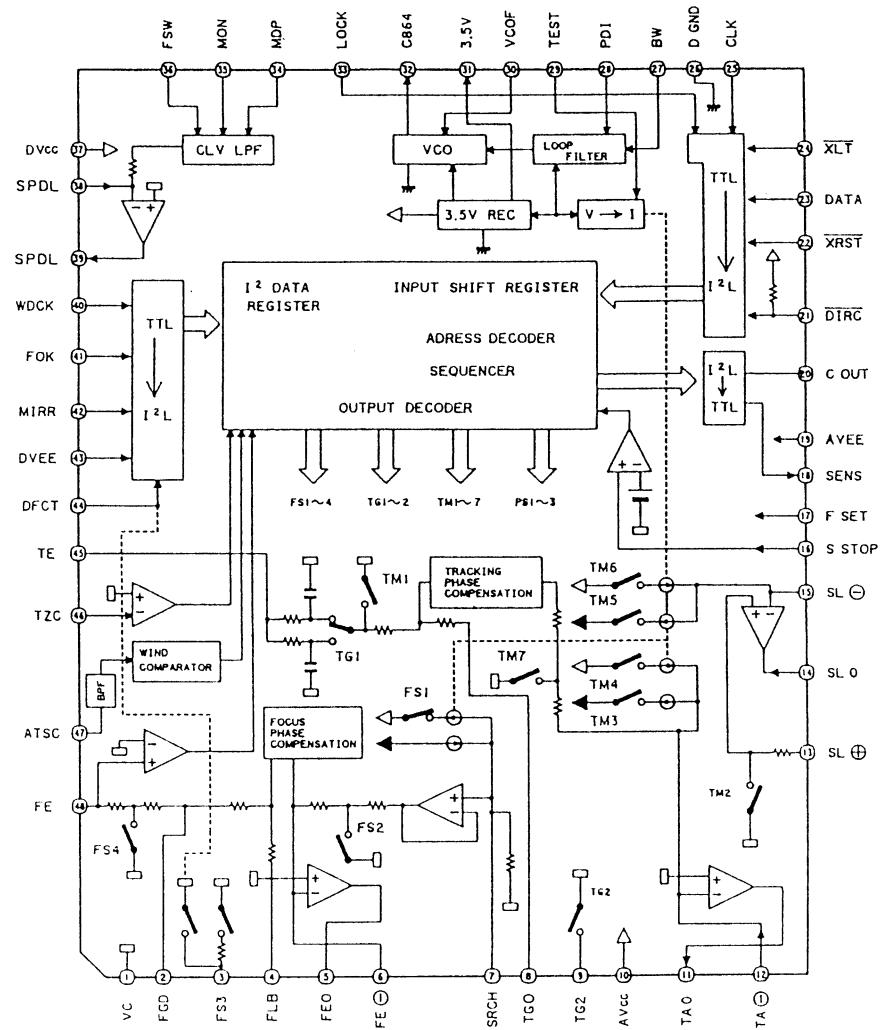
2-2. Pin Description

Pin No.	Pin Name	I/O	Description
1	SUBQ	I	Sub-code Q serial data input. Connected to SUBQ of IC 103.
2	EMPH	O	Judges whether emphasis was applied or not and outputs a signal. Outputs "L" when emphasis was applied.
3	AMUTG	O	Analog muting output. Outputs "L" with muting ON.
4	MUTG	O	Muting output of IC 103. Connected to MUTG of IC 103.
5	LDON	O	Laser diode control output. Connected to LDON of the RF amplifier. "L" causes the laser diode to emit light.
6	CLK	O	Outputs a clock signal to transfer serial data to IC 104 and IC 103. Connected to the CLK pins of IC 104 and IC 103.
7	XLT	O	Latch output of the serial data transferred to IC 104 and IC 103. Connected to the XLT pins of IC 104 and IC 103.
8	DATA	O	Outputs serial data transferred to IC 104 and IC 103. Connected to the DATA pins of IC 104 and IC 103.
9	XRST	O	Outputs the reset signal for IC 104 and IC 103. Connected to the XRST pins of IC 104 and IC 103.
10 11 12	RMC A RMC B RMC C	I	Remote control data inputs
13	SYNC 2	I	Synchrate input. When this pin goes "L", back skip is performed.

Pin No.	Pin Name	I/O	Description
14 15 16 17	KEY 0 KEY 1 KEY 2 KEY 3	I I I I	Key matrix data inputs
18	<u>S Y N C</u> 1	I/O	Synchrate input/output. Outputs "L" during play. Inputs a signal in other modes. The "L" input in the "H" period causes PLAY.
19	GFS	I	Frame sync locking state input.
20	SENS	I	Sensing input. Connected to the SENS pins of IC 104 and IC 103.
21	FOK	I	Focus OK signal input from the RF amplifier. Connected to the FOK pin of the RF amplifier.
22	<u>D I R C</u>	O	Output to CXA-1082Q. Used when inverting the track jump state.
23	<u>S W I L</u>	I	Detects that the 2-axis device is at the start position. Goes "L" when TOC is read and in the STOP mode.
24	<u>S W O P E N</u>	I	Disc table open detection switch input. Goes "L" when the disc table is open.
25	<u>S W C L O S E</u>	I	Disc table close detection switch input. Goes "L" when the disc table is closed.
26	VDD		Power terminal (VDD)
27	Vss		Power terminal (Vss)
28 38	{ SEG A } SEG K	O O	FL display segment outputs
39 44	NC } NC		Not used.
45 51	G 7 } G 1	O O	Function key digit signal outputs. FL display segment outputs.
52	VFD P	I	FL display drive power input
53	SCOR	I	Sub-code S0 + S1 input. Interrupt at fall. Connected to SCOR of IC 103
54	NC		Not used.
55	C4M	I	External clock input (4.3218 MHz, 1.8 Vp-p)
56	<u>R S T</u>	I	Reset input
57	OPEN	O	Output to open the disc table. Goes "H" during the opening operation.
58	VDD		Power terminal (VDD)
59	CLOSE	O	Output to close the disc table. Goes "H" during the closing operation.
60	<u>S W T E S T</u>	I	Pickup adjustment switch input. Goes "L" during adjustment.
61	NC		Not used.
62	S Q C K	O	Sub-code reading clock output. Connected to SQCK of IC 103.
63	NC		Not used.
64	NC		Not used.

3. I C, CXA1082Q (or CXA1082AQ)

3-1. Pin Name



The arrow at each pin shows signal in/out.

3-2. Pin Description

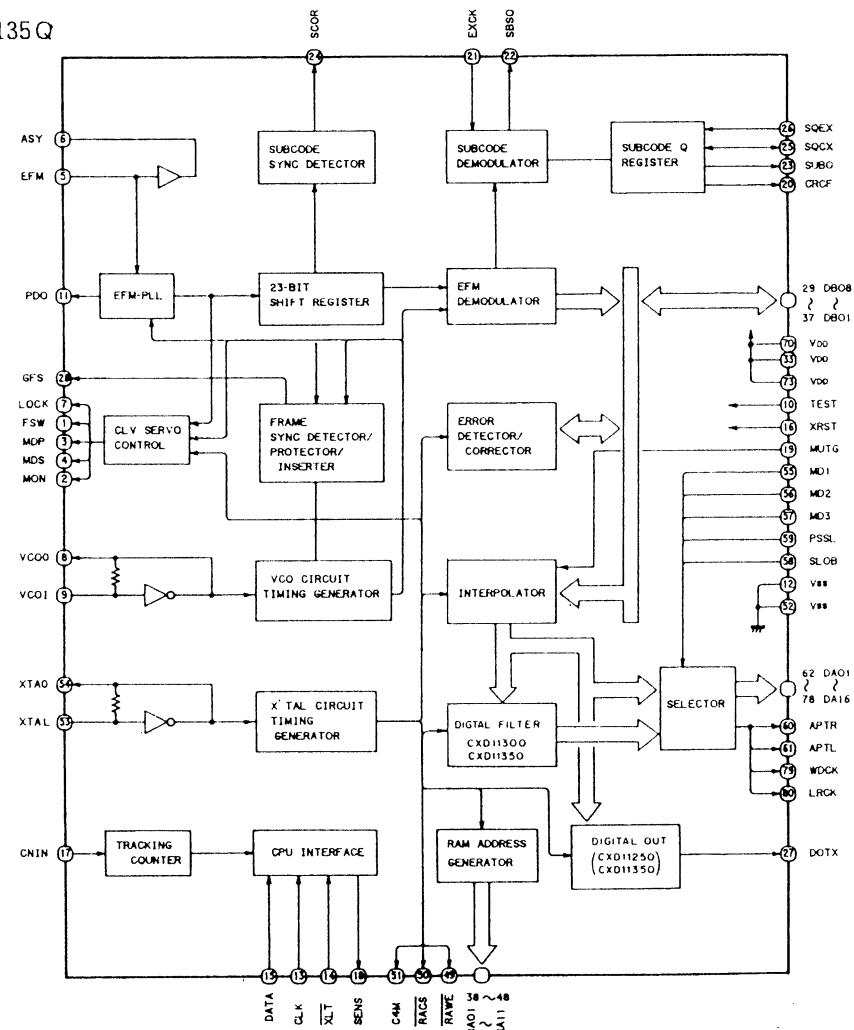
Pin No.	Pin Name	Description
1	V C	Connected to ground.
2	F G D	A capacitor is connected between this pin and pin 3 to attenuate the high-frequency gain of the focus servo.
3	F S 3	Turning on/off of F S 3 switches the high-frequency gain of the focus servo.
4	F L B	The time constant is externally connected to this pin to boost the low-frequency components of the focus servo.
5	F E O	Focus error signal output.
6	F E \ominus	Inverting input of the focus amplifier.
7	S R C H	The time constant is externally connected to this pin to shape the focus search waveform.
8	T G 0	The time constant components are externally connected to this pin to switch the tracking high-frequency gain.
9	T G 2	The time constant components are externally connected to this pin to switch the tracking high-frequency gain.
10	A V C C	Power terminal.
11	T A O	Tracking error signal output.
12	T A \ominus	Inverting input of the tracking amplifier.

Pin No.	Pin Name	Description
13	SL \oplus	Non-inverting input of the sled amplifier.
14	SLO	Sled amplifier output.
15	SL \ominus	Non-inverting input of the sled amplifier.
16	SSTOP	For the detection signal of the on/off operation of the limit switch detects the innermost circumference. Fixed at "L" in this model.
17	FSET	Sets the peak of the focus tracking phase compensation and fo of the CLV LPF.
18	SENS	Output of the IC internal state according to the address of DATA (Changes according to the address contents of the internal serial register).
19	AVEE	Power terminal.
20	C. OUT	Signal output to count the track numbers during high-speed access.
21	DIRCT	Used during the track jump. Goes "H" normally. Reverses the direction of the track jump at "L". When it is set to "H" in sequence, the normal tracking mode is set. This pin is set to "L" for a specified time when the rise and fall of TZC are detected.
22	XRST	Clears all internal registers at "L".
23	DATA	Serial data transferred from CPU. Inputs from the LSB.
24	XLT	Transfers the contents of the internal serial shift register to each latch which was address decoded when this pin goes "L".
25	CLK	DATA transfer clock. Reads data at its trailing edge.
26	D GND	Ground terminal.
27	BW	—
28	PD1	Inputs the output, PD0, from the phase comparator in CXD1135.
29	ISET	Flows current to determine the focus search, track jump and the height of the sled kick.
30 31	VCOF 3.5V	The free-running frequency of the VCO is approximately proportional to the resistance between these pins and thirty one pin.
32	C8.64	8.64 MHz VCO output.
33	LOCK	Connected to LOCK of CXD1135.
34	MDP	Connects the MDP pin of CXD1135.
35	MON	Connects the MON pin of CXD1135.
36	FSW	The time constant of LPF for the CLV servo error signal is externally connected to this pin.
37	DVCC	Power terminal.
38	SPDL	Inverting input of the spindle drive amplifier.
39	SPDLO	Drives the spindle motor.
40	WDCK	Word clock signal input.
41	FOK	Focus OK signal input.
42	MIRR	Mirror signal input.
43	DVEE	Ground terminal.

Pin No.	Pin Name	Description
44	D F C T	Switches off the focus servo and tracking servo while this pin inputs "H".
45	T E	Tracking error signal input.
46	T Z C	Tracking zero-cross comparator input.
47	A T S C	Wind comparator input for ATSC detection. Inputs the information that a mechanical impact has been applied to the unit.
48	F E	Focus error signal input

4. I C, CXD1135Q

4-1. Pin Name



4-2. Pin Description

Pin No.	Pin Name	I/O	Description
1	F S W	O	Output to switch the time constant of the spindle motor output filter.
2	M O N	O	Spindle motor on/off control output.
3	M D P	O	Spindle motor drive output. Coarse control in the CLV. S mode and phase control in the CLV. P mode.
4	M D S	O	Spindle motor drive output. Speed control in the CLV. S mode.
5	E F M	I	Inputs an EFM signal from the RF amplifier.

Pin No.	Pin Name	I/O	Description
6	A SY	O	Output to control the slice level of the EFM signal.
7	LOCK	O	The GFS signal is sampled by the WFCK/16. When the GFS signal is "H", this pin outputs "H", and when the signal is "L" 8 times continuously, it outputs "L".
8	VCOO	O	VCO output. When this is locked to the EFM signal, f=8.6436MHz
9	VCO I	I	VCO input
10	TEST	I	(0 V)
11	PDO	O	Phase comparison output between the EFM signal and VCO/2.
12	VSS	—	GND (0 V)
13	CLK	I	Inputs a clock signal for the serial data transfer from CPU. Latches data at the rise of the clock signal.
14	XLT	I	Latch input from CPU. Latches 8-bit shift register data (serial data from CPU) to each register.
15	DATA	I	Inputs serial data from CPU.
16	XRST	I	System reset input. The system is reset at "L" input.
17	CNIN	I	Tracking pulse input.
18	SENSE	O	Outputs the internal state according to the address.
19	MUTG	I	Muting input. When the ATT M in the internal register is "L", the system is in the normal state if the MUTG is "L" and the sound is muted if the MUTG is "H".
20	CRCF	O	Outputs the CRC checking result of sub-code Q.
21	EXCK	I	Clock input for the sub-code serial output.
22	SBSO	O	Sub-code serial output.
23	SUBQ	O	Sub-code Q output.
24	SCOR	O	Sub-code sync S0+S1 output.
25	SQCK	I/O	Clock signal for reading of sub-code Q.
26	SQEX	I	SQCK select input.
27	DOTX	O	Digital audio interface output (WFCK is output when being off).
28	GFS	O	Display output of the frame sync locking state. Goes "H" when locked.
29	DB08	I/O	Data pin of the external RAM. DATA 8 (MSB)
30	DB07	I/O	Data pin of the external RAM. DATA 7
31	DB06	I/O	Data pin of the external RAM. DATA 6
32	DB05	I/O	Data pin of the external RAM. DATA 5
33	VDD	—	Power supply (+5 V).
34	DB04	I/O	Data pin of the external RAM. DATA 4
35	DB03	I/O	Data pin of the external RAM. DATA 3

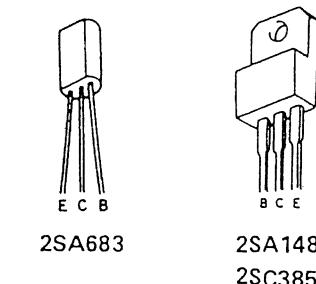
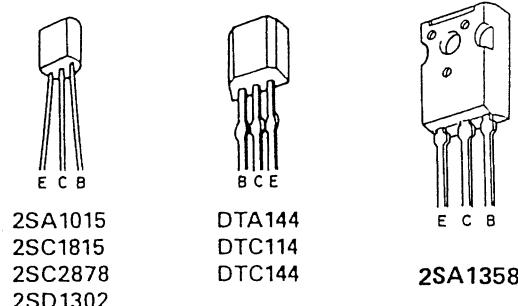
Pin No.	Pin Name	I/O	Description
36	DB02	I/O	Data pin of the external RAM. DATA 2
37	DB01	I/O	Data pin of the external RAM. DATA1 (LSB)
38	RA01	O	Address output of the external RAM. ADDR01 (LSB)
39	RA02	O	Address output of the external RAM. ADDR02
40	RA03	O	Address output of the external RAM. ADDR03
41	RA04	O	Address output of the external RAM. ADDR04
42	RA05	O	Address output of the external RAM. ADDR05
43	RA06	O	Address output of the external RAM. ADDR06
44	RA07	O	Address output of the external RAM. ADDR07
45	RA08	O	Address output of the external RAM. ADDR08
46	RA09	O	Address output of the external RAM. ADDR09
47	RA10	O	Address output of the external RAM. ADDR10
48	RA11	O	Address output of the external RAM. ADDR11 (MSB)
49	RAWE	O	Outputs the WRITE ENABLE signal to the external RAM (active at "L").
50	RACS	O	Outputs the CHIP SELECT signal to the external RAM (active at "L").
51	C4M	O	1/2 division output of the crystal oscillator. F=4.2336MHz
52	VSS	-	GND (0V)
53	XTAL	I	Crystal oscillator input. f=8.4672MHz
54	XTAO	O	Crystal oscillator output. f=8.4672MHz
55	MD1	I	Mode select input 1 used at "H"
56	MD2	I	Mode select input 2 used at "L"
57	MD3	I	Mode select input 3 used at "L"
58	SLOB	I	Input to switch the code of the audio data output. "L" causes the 2 second complement output and "H" causes the offset binary output.
59	PSSL	I	Input to switch the mode of the audio data output. "L" causes serial output and "H" causes parallel output.
60	APTR	O	Aperture correction control output. 44. 1kHz with the filter OFF.
61	APTL	O	Aperture correction control output. 44. 1kHz with the filter OFF.
62	DA01	O	DA01 (LSB of parallel audio data) output with PSSL="H". C1F1 output with PSSL="L".
63	DA02	O	DA02 output with PSSL="H". C1F2 output with PSSL="L".
64	DA03	O	DA03 output with PSSL="H". C2F1 output with PSSL="L".
65	DA04	O	DA04 output with PSSL="H". C2F2 output with PSSL="L".

Pin No.	Pin Name	I/O	Description
66	DA05	O	DA05 output with PSSL="H". C2FL output with PSSL="L".
67	DA06	O	DA06 output with PSSL="H". C2P0 output with PSSL="L".
68	DA07	O	DA07 output with PSSL="H". RFCK output with PSSL="L".
69	DA08	O	DA08 output with PSSL="H". WFCK output with PSSL="L".
70	DA09	O	DA09 output with PSSL="H". PLCK output with PSSL="L". (Note 1)
71	DA10	O	DA10 output with PSSL="H". UGFS output with PSSL="L".
72	DA11	O	DA11 output with PSSL="H". GTOP output with PSSL="L".
73	VDD	-	Power supply (+5V)
74	DA12	O	DA12 output with PSSL="H". RA0V output with PSSL="L".
75	DA13	O	DA13 output with PSSL="H". C4LR output with PSSL="L".
76	DA14	O	DA14 output with PSSL="H". C210 output with PSSL="L".
77	DA15	O	DA15 output with PSSL="H". C210 output with PSSL="L". (Note 2)
78	DA16	O	DA16 (MSB of parallel audio data) output with PSSL="H". DATA output with PSSL="L". (Note 3)
79	WDCK	O	Strobe signal output. 88. 2kHz with the filter OFF.
80	LRCK	O	Strobe signal output. 44. 1 kHz with the filter OFF

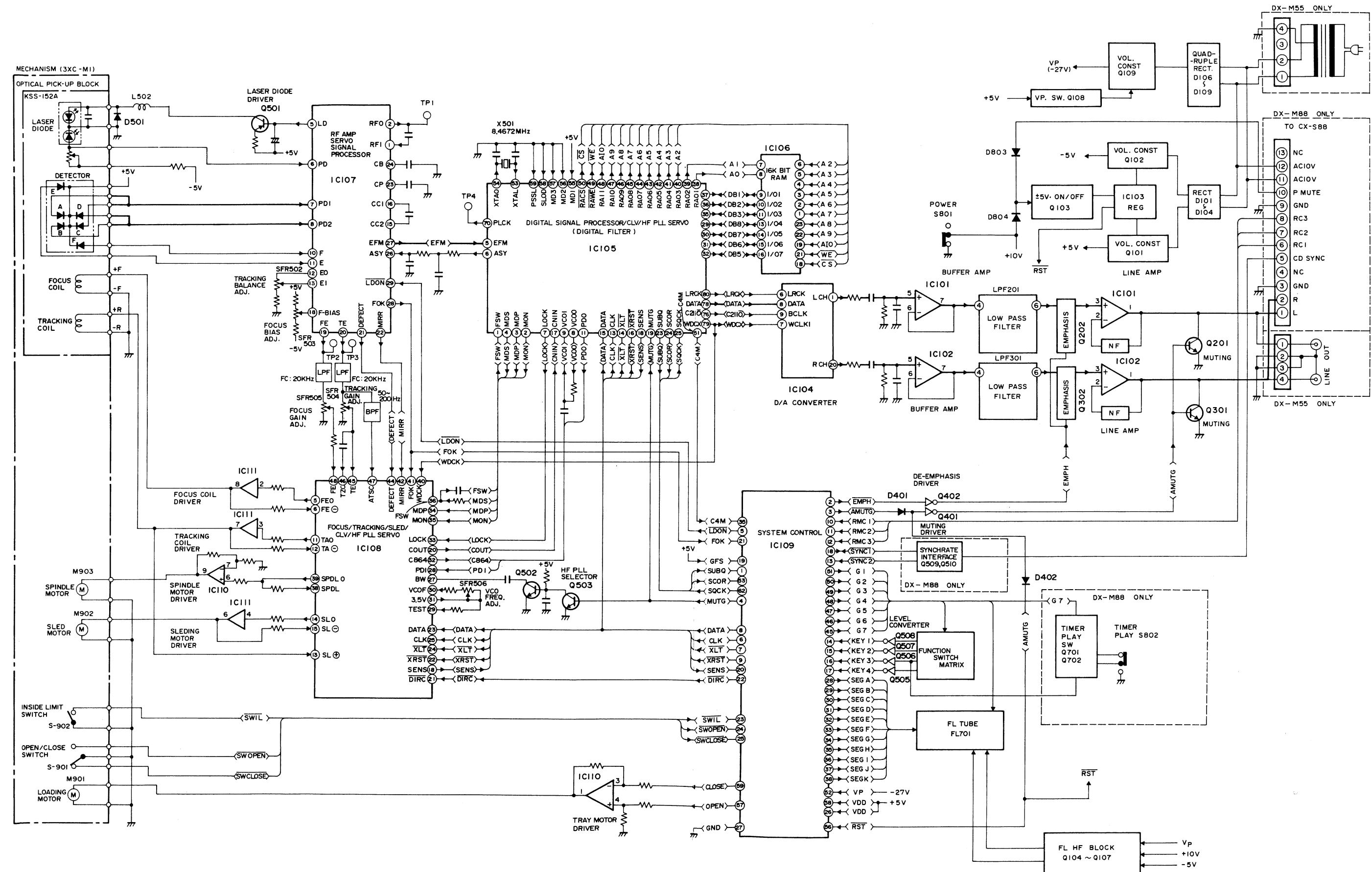
Note 1) PLCK: VCO/2 output. When locked to the EFM signal, f = 4.3218MHz

Note 2) C210: Bit clock signal. f = 2.1168MHz

Note 3) DATA: Audio signal serial data output

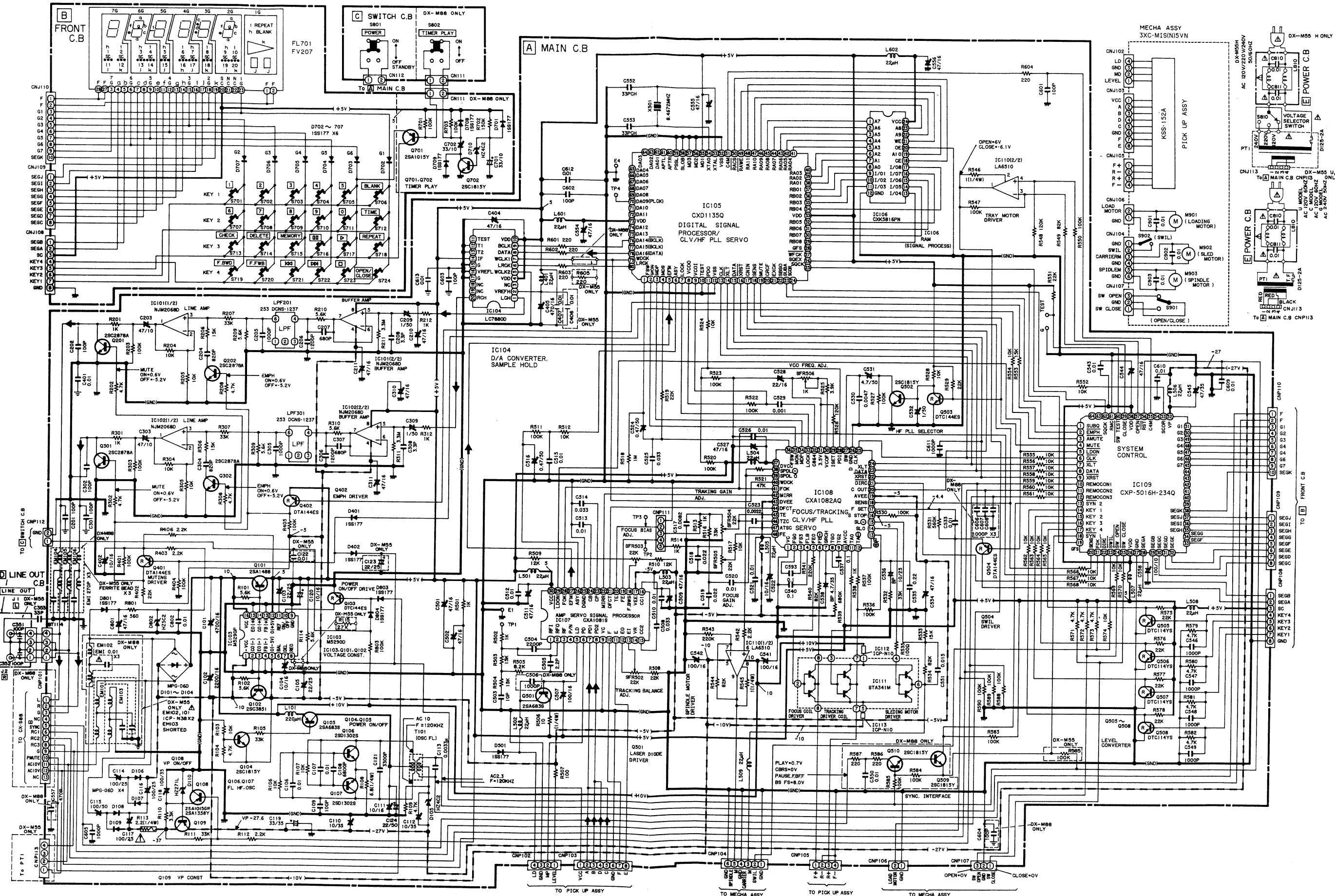


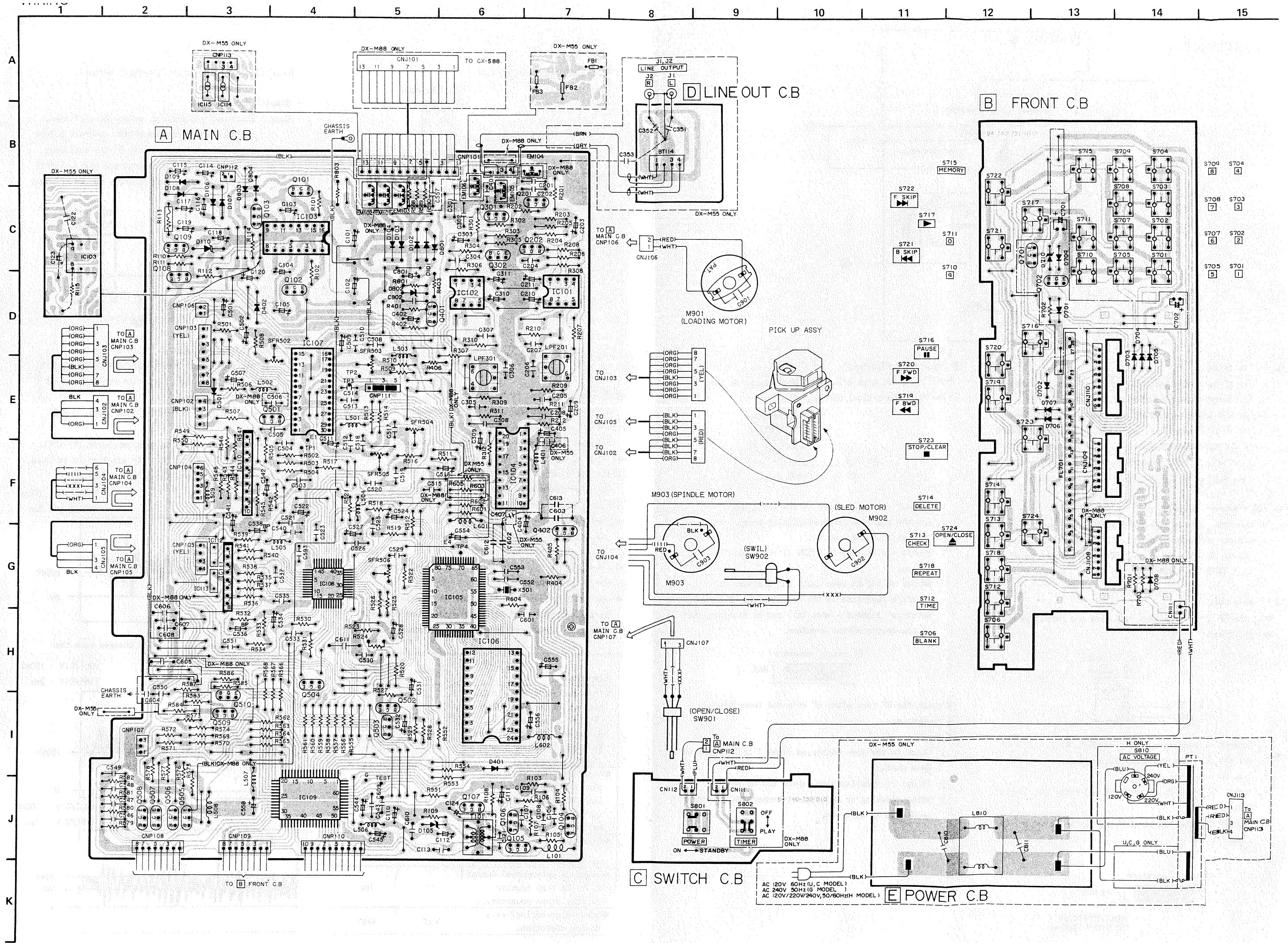
BLOCK DIAGRAM



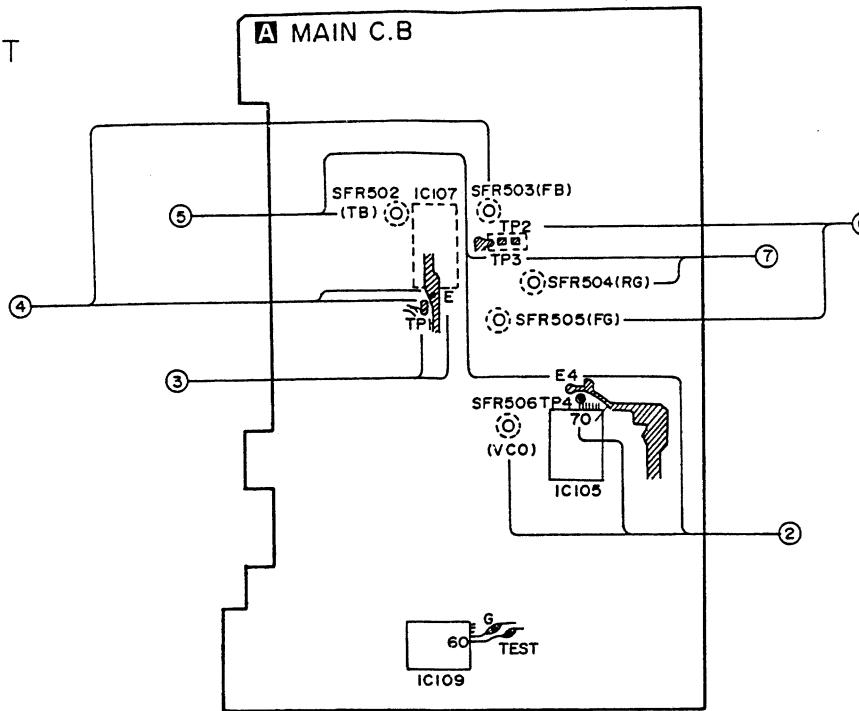
ELECTRICAL MAIN PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
---	IC ---		C211	*87-010-380-010	CAP,ELECT 47-16SME	△EM103	*87-030-131-010	NOISE FILTER,EM10.01(DX-M88)	S802	84-722-613-010	SW SLIDE 2-2(TIMER PLAY (DX-M88)
87-001-184-010	IC,CXA1081S		C301	*87-018-032-010	CAP,CERA-SOL S 100P	△EM104	*87-030-130-010	NOISE FILTER,EM1270P(DX-M88)	---	LINE OUT CIRCUIT BOARD SECTION --- (DX-M55 ONLY)	
87-020-794-010	IC,CXA1082AQ		C302	*87-018-032-010	CAP,CERA-SOL S 100P	△EM105	*87-030-130-010	NOISE FILTER,EM1270P(DX-M88)	PCB-D	*	LINE OUT CIRCUIT BOARD
87-020-795-010	IC,CXD1135Q		C303	*87-010-374-010	CAP,ELECT 47-10V	△EM106	*87-030-130-010	NOISE FILTER,EM1270P(DX-M88)	C351	*87-018-119-010	CAP,CERA-SOL SS 100P
87-001-185-010	IC,CXK5816PN		C304	*87-014-055-010	CAP,PP 820P	FB1	*87-003-219-010	FERRITE BEAD-BLOZRN2	C352	*87-018-119-010	CAP,CERA-SOL SS 100P
84-719-637-010	IC,CXP5016H-234Q		C307	*87-014-053-010	CAP,PP 680P	FB2	*87-003-219-010	FERRITE BEAD-BLOZRN2	C353	*87-018-113-010	CAP,CERA-SOL SS 33P
87-001-196-010	IC,ICP-N10		C308	*87-018-003-010	CAP,CERA-SOL S 3.3P	FB3	*87-003-219-010	FERRITE BEAD-BLOZRN2			
87-001-132-010	IC,ICP-N38(DX-M55)		C309	*87-010-401-010	CAP,ELECT 1-50SME	L101	*87-005-135-010	COIL,220UH	J1	82-781-623-010	PIN JACK 2P(LINE OUT,L)
87-001-173-010	IC,LA6510		C310	*87-010-380-010	CAP,ELECT 47-16SME	L401	*87-003-147-010	MICRO INDUCTOR 22UH	J2	+++	PIN JACK 2P(LINE OUT,R)
87-001-172-010	IC,LC7880D		C311	*87-010-380-010	CAP,ELECT 47-16SME	L501	*87-003-147-010	MICRO INDUCTOR 22UH	---	POWER CIRCUIT BOARD SECTION --- (DX-M55 ONLY)	
87-001-170-010	IC,MS290P		C402	*87-010-378-010	CAP,ELECT 10-16	L502	*87-003-147-010	MICRO INDUCTOR 22UH	PCB-E	*	POWER CIRCUIT BOARD
87-001-171-010	IC,NJM2068D		C404	*87-010-380-010	CAP,ELECT 47-16SME	L503	*87-003-147-010	MICRO INDUCTOR 22UH	△C810	*87-019-112-010	LINE CAP 0.01E
87-001-169-010	IC,STA341M		C405	*87-010-235-010	CAP,ELECT 470-16	L504	*87-003-147-010	MICRO INDUCTOR 22UH	△C811	*87-019-112-010	LINE CAP 0.01E
---	TRANSISTOR ---		C406	*87-018-134-010	CAP,CERA-SOL SS 0.01(DX-M55)	L505	*87-003-147-010	MICRO INDUCTOR 22UH	△L810	87-030-126-010	NOISE FILTER LF-4A09
89-106-837-010	TRANSISTOR,2SA683S		C407	*87-018-134-010	CAP,CERA-SOL SS 0.01(DX-M55)	L506	*87-003-147-010	MICRO INDUCTOR 22UH	---	MISCELLANEOUS ---	
89-110-154-010	TRANSISTOR,2SA1015Y		C501	*87-010-380-010	CAP,ELECT 47-16SME	L507	*87-003-147-010	MICRO INDUCTOR 22UH	87-046-298-010	DAD PICK UP S-N	
89-110-155-010	TRANSISTOR,2SA1015GR		C502	*87-010-380-010	CAP,CERA-SOL S 10P	L508	*87-003-147-010	MICRO INDUCTOR 22UH	△	87-034-732-010	AC CORD(DX-M55H)
89-113-584-010	TRANSISTOR,2SA1358Y		C503	*87-018-009-010	CAP,CERA-SOL S 10P	L509	*87-003-147-010	MICRO INDUCTOR 22UH	△	87-034-730-010	AC CORD(DX-M55U,C)
89-114-881-010	TRANSISTOR,2SA1488		C505	*87-018-002-010	CAP,CERA-SOL 2,2P	L601	*87-003-147-010	MICRO INDUCTOR 22UH	△	87-034-735-010	AC CORD(DX-M55G)
89-318-154-010	TRANSISTOR,2SC1815Y		C507	*87-010-112-010	CAP,ELECT 100-16	L602	*87-003-147-010	MICRO INDUCTOR 22UH			
89-328-785-010	TRANSISTOR,2SC2878A		C509	*87-010-380-010	CAP,ELECT 47-16SME	LPF201	*84-732-618-010	LPF,253DCNS-1237	LPF301	*84-732-618-010	LPF,253DCNS-1237
89-338-511-010	TRANSISTOR,2SC3851		C511	*87-010-380-010	CAP,ELECT 47-16SME	△R113	87-029-070-010	RES,FUSIBLE 1/4W-2.2	SFR502	*87-021-743-010	SFR 22K
89-413-023-010	TRANSISTOR,2SD1302S		C516	*87-010-400-010	CAP,ELECT 0.47-50SME	SFR503	*87-021-743-010	SFR 22K	SFR504	*87-021-743-010	SFR 22K
87-026-219-010	TRANSISTOR,DTA144ES		C521	*87-018-047-010	CAP,CERA-SOL S 0.01Y-16	SFR505	*87-021-743-010	SFR 22K	SFR505	*87-021-743-010	SFR 22K
87-026-215-010	TRANSISTOR,DTC114YS		C522	*87-010-378-010	CAP,ELECT 10-16	SFR506	*87-021-738-010	SFR 1K	PT1	84-740-757-010	POWER TRANS. G(DX-M55G)
87-026-218-010	TRANSISTOR,DTC144ES		C524	*87-010-400-010	CAP,ELECT 0.47-50SME	T101	*84-720-608-010	TRANSFORMER,OSC FL	PT1	84-740-755-010	POWER TRANS. H(DX-M55H)
---	DIODE ---		C526	*87-018-047-010	CAP,CERA-SOL S 0.01Y-16	X501	*84-719-610-010	CRYSTAL 8.4672MHZ	PT1	84-740-756-010	POWER TRANS. UC(DX-M55U/C)
87-020-110-010	DIODE,1SS177		C527	*87-010-380-010	CAP,ELECT 47-16SME	---	FRONT CIRCUIT BOARD SECTION ---		S810	87-031-586-010	SWITCH,ROTARY(AC VOLTAGE) (DX-M55H)
87-020-992-010	DIODE,MPG06D-52		C528	*87-010-379-010	CAP,ELECT 22-16SME				S901	87-031-871-010	LEAF SW 1-2(OPEN/CLOSE)
87-020-407-010	DIODE,ZENER HZ27-1L		C531	*87-010-404-010	CAP,ELECT 4.7-50SME				S902	87-031-914-010	LEAF SW 1-1(SW1)
87-027-393-010	DIODE,ZENER HZ4C2		C532	*87-010-401-010	CAP,ELECT 1-50SME						
87-027-555-010	DIODE,ZENER HZ5C2		C534	*87-010-380-010	CAP,ELECT 47-16SME						
---	MAIN CIRCUIT BOARD SECTION ---		C536	*87-010-135-010	CAP,ELECT BP 10-25V	PCB-B	*	FRONT CIRCUIT BOARD			
PCB-A	*	MAIN CIRCUIT BOARD	C543	*87-018-047-010	CAP,CERA-SOL S 0.01Y-16	C701	*87-010-077-010	CAP,ELECT 33-10SRE(DX-M88)			
C101	*87-010-124-010	CAP,ELECT 4700-16V	C544	*87-010-380-010	CAP,ELECT 47-16SME	C702	*87-010-077-010	CAP,ELECT 33-10SRE(DX-M88)			
C102	*87-015-997-010	CAP,ELECT 2200-16SME	C545	*87-010-246-010	CAP,ELECT 47-35SME	FL701	84-732-615-010	FL-FV207			
C103	*87-010-038-010	CAP,ELECT 22-25	C546	*87-018-044-010	CAP,CERA-SOL S 1000P	S701	87-031-771-010	TACT SW(1)			
C104	*87-010-378-010	CAP,ELECT 10-16	C547	*87-018-044-010	CAP,CERA-SOL S 1000P	S702	87-031-771-010	TACT SW(2)			
C105	*87-010-038-010	CAP,ELECT 22-25	C548	*87-018-044-010	CAP,CERA-SOL S 1000P	S703	87-031-771-010	TACT SW(3)			
C109	*87-018-032-010	CAP,CERA-SOL S 100P	C549	*87-018-044-010	CAP,CERA-SOL S 1000P	S704	87-031-771-010	TACT SW(4)			
C110	*87-010-391-010	CAP,ELECT 10-35SME	C552	*87-018-062-010	CAP TC-S,33P CH	S705	87-031-771-010	TACT SW(5)			
C111	*87-010-378-010	CAP,ELECT 10-16	C553	*87-018-062-010	CAP TC-S,33P CH	S706	87-031-771-010	TACT SW(BLANK)			
C112	*87-010-391-010	CAP,ELECT 10-35SME	C554	*87-010-380-010	CAP,ELECT 47-16SME	S707	87-031-771-010	TACT SW(6)			
C114	*87-010-384-010	CAP,ELECT 100-25SME	C555	*87-010-380-010	CAP,ELECT 47-16SME	S708	87-031-771-010	TACT SW(7)			
C115	*87-010-247-010	CAP,ELECT 100U-50V SME	C556	*87-010-380-010	CAP,ELECT 47-16SME	S709	87-031-771-010	TACT SW(8)			
C116	*87-010-384-010	CAP,ELECT 100-25SME	C557	*87-018-040-010	CAP,CERA-SOL S 470P(DX-M88)	S713	87-031-771-010	TACT SW(CHECK)	Combination Circuit Board	A	84-732-601-210
C117	*87-010-384-010	CAP,ELECT 100-25SME	C558	*87-010-264-010	CAP,ELECT 100-10 SRE	S714	87-031-771-010	TACT SW(DELETE)	PCB-A	84-732-602-210	
C118	*87-010-393-010	CAP,ELECT 100-35SME	C601	*87-018-119-010	CAP,CERA-SOL SS 100P	S715	87-031-771-010	TACT SW(MEMORY)	PCB-D	84-732-603-210 (DX-M55 ONLY)	
C119	*87-010-392-010	CAP,ELECT 33-35SME	C602	*87-018-119-010	CAP,CERA-SOL SS 100P	S716	87-031-771-010	TACT SW(P			





ADJUSTMENT



① Initializing

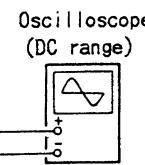
- For HF Vp-p adjustment ③ and focus bias adjustment ④, connect pin 60 (TEST) of IC109 to GND.
- For the tracking balance adjustment, connect the center position (T, E) of SFR504 to GND, in addition to the procedure in Item 1.
- After adjustment, be sure to remove the grounding lead wire at each pin.

② VCO Frequency Adjustment

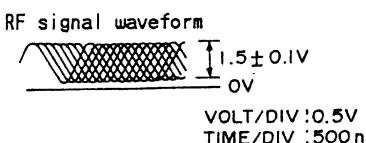
- Open the tray using the OPEN/CLOSE button.
- Connect a frequency counter to TP4 (VCO), E4.
- Adjust SFR506 so that the frequency counter reading is 4.98MHz to 5.02MHz.

③ HF Vp-p Check

Make the HF Vp-p check when replacing and repairing the optical block.

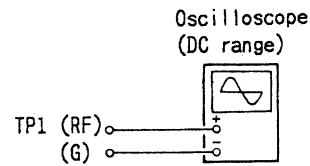


- Connect an oscilloscope to TP1 (HF), E1.
- Put the set into the initializing mode.
- Turn on the power switch.
- Insert a disk YEDS-18 (YEDS-1) and press the ▶ PLAY button.
- The waveform on the oscilloscope is as shown in the figure below.

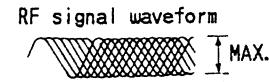


④ Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.



- Connect an oscilloscope to TP1 (HF), E1.
- Put the set into the initializing mode.
- Turn on the power switch.
- Insert a disk YEDS-18 (YEDS-1) and press the ▶ PLAY button.
- Adjust SFR503 to make clear and maximize the waveform amplitude on the oscilloscope. For clearer waveform, diamond shapes (\diamond) can be distinguished in the center of the waveform.

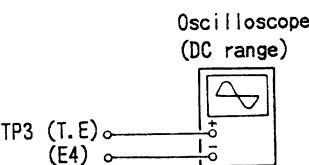


Recheck the HF Vp-p after HF Vp-p and focus bias adjustments.

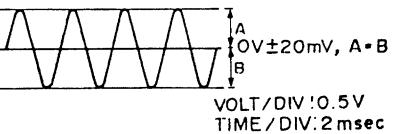
Check :

- Check in the same manner as Items 1 to 5 of the HF Vp-p check.
- If not of specification, check the HF Vp-p.
- After checking or adjustment, remove the grounding lead wire at each pin.

⑤ Tracking Balance Adjustment



- Connect an oscilloscope to TP3 (T.E), E4.
- Put the set into the initializing mode.
- Turn on the power switch.
- Insert a disk YEDS-18 (YEDS-1) and press the ▶ PLAY button.
- Adjust SFR502 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- After adjustment, remove the grounding lead wire at each pin.



⑥, ⑦ Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

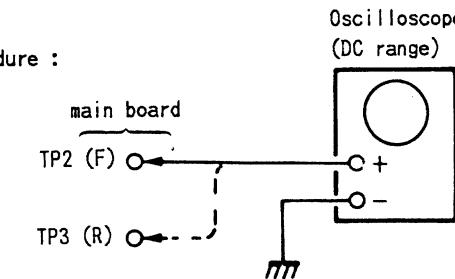
Symptoms	Gain	Focus	Tracking
• The time until music starts becomes longer for STOP→▶ PLAY or automatic selection (◀▶ buttons pressed. (Normally takes about 2 seconds.)	low	low or high	
• Music does not start and disc continues to rotate for STOP→▶ PLAY or automatic selection (◀▶ buttons pressed.)	—	low	
• Disc table opens shortly after STOP→▶ PLAY.	low or high	—	
• Sound is interrupted during PLAY. Or time counter display stops progressing.	—	low	
• More noise during 2-axis device operation.	high	high	

The following is a simple adjustment method.

Simple Adjustment

Note : Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure :



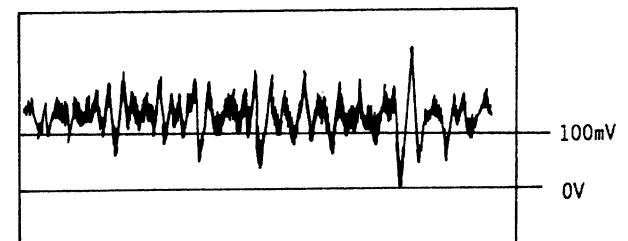
1. Keep the set horizontal.

If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.

- Insert disc YEDS-18 (YEDS-1) and press ▶ PLAY button.
- Connect oscilloscope to main amp board TP2 (F).

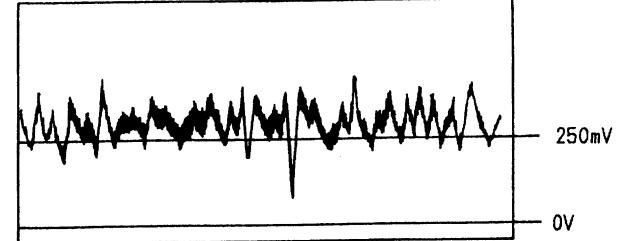
- Adjustment SFR505 so that the waveform is as shown in the figure below. (focus gain adjustment)

VOLT/DIV : 100mV
TIME/DIV : 2ms

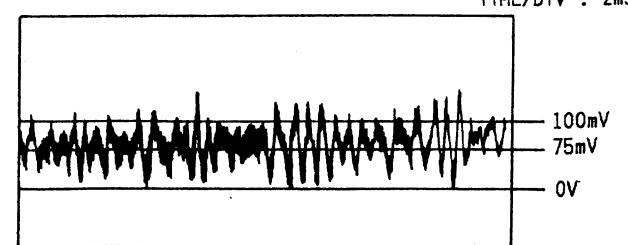


- Incorrect Examples (DC level changes more than on-adjusted waveform)

VOLT/DIV : 100mV
TIME/DIV : 2ms



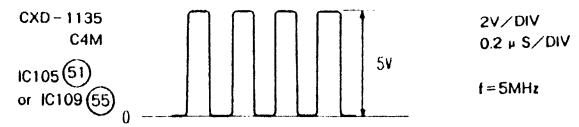
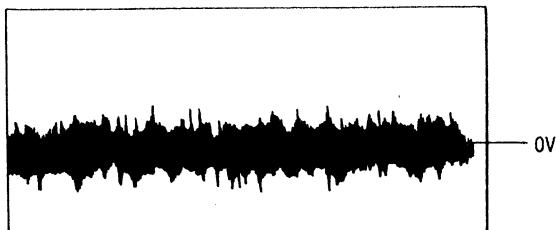
high focus gain



WAVE FORM

5. Connect oscilloscope to main board TP3 (TE).
 6. Adjust SFR504 so that the waveform is as shown in the figure below. (tracking gain adjustment)

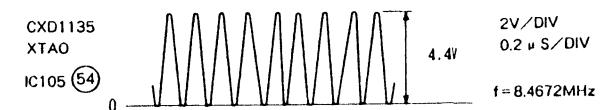
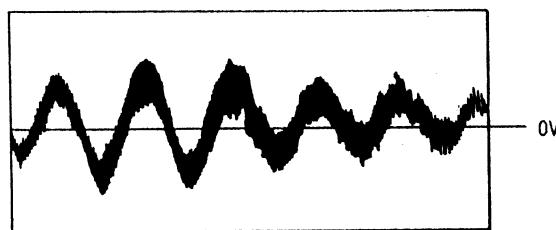
VOLT/DIV : 0.5V
 TIME/DIV : 2mS



- Incorrect Example (fundamental wave appears)

low tracking gain

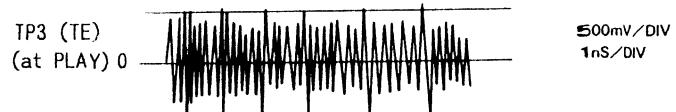
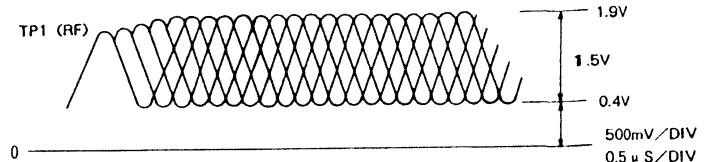
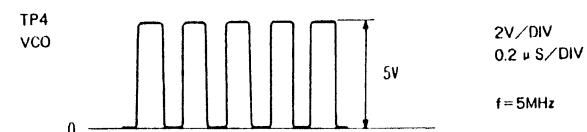
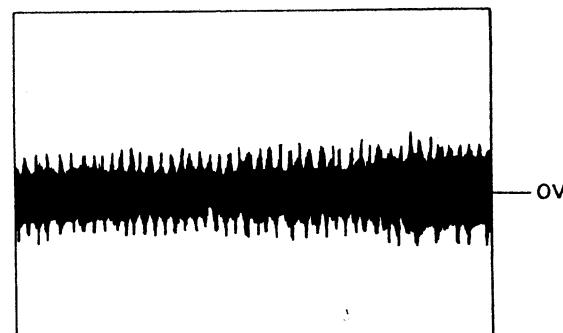
VOLT/DIV : 0.5V
 TIME/DIV : 2mS



high tracking gain

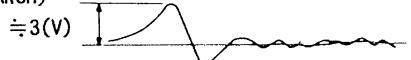
(higher fundamental wave than for low gain)

VOLT/DIV : 0.5V
 TIME/DIV : 2mS



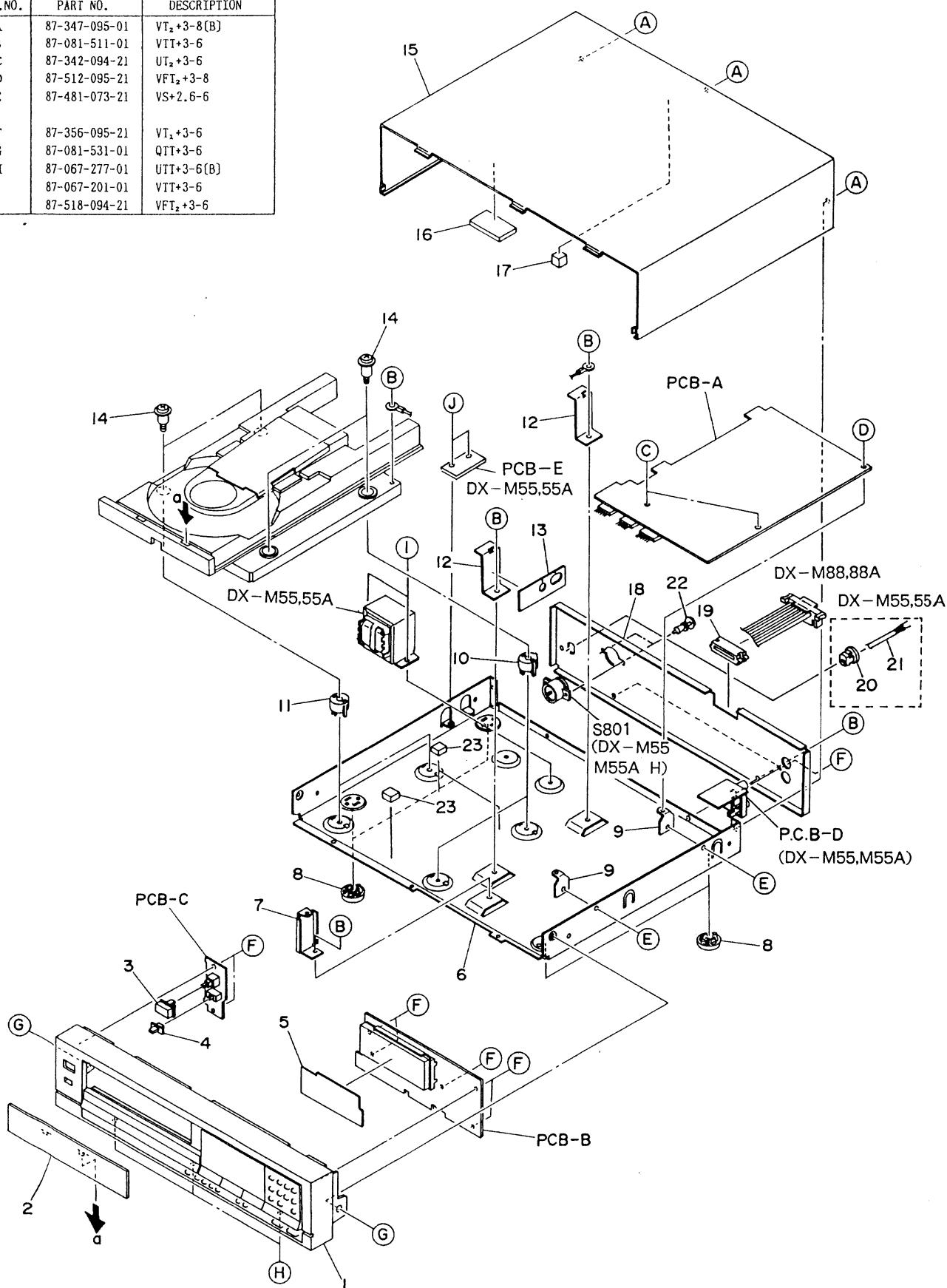
TP2 (FE)

(at FOCUS SEARCH)



EXPLODED VIEW - 1

REF. NO.	PART NO.	DESCRIPTION
A	87-347-095-01	VT ₂ +3-8(B)
B	87-081-511-01	VTT+3-6
C	87-342-094-21	UT ₂ +3-6
D	87-512-095-21	VFT ₂ +3-8
E	87-481-073-21	VS+2.6-6
F	87-356-095-21	VT ₁ +3-6
G	87-081-531-01	QTT+3-6
H	87-067-277-01	UTT+3-6(B)
I	87-067-201-01	VTT+3-6
J	87-518-094-21	VFT ₁ +3-6

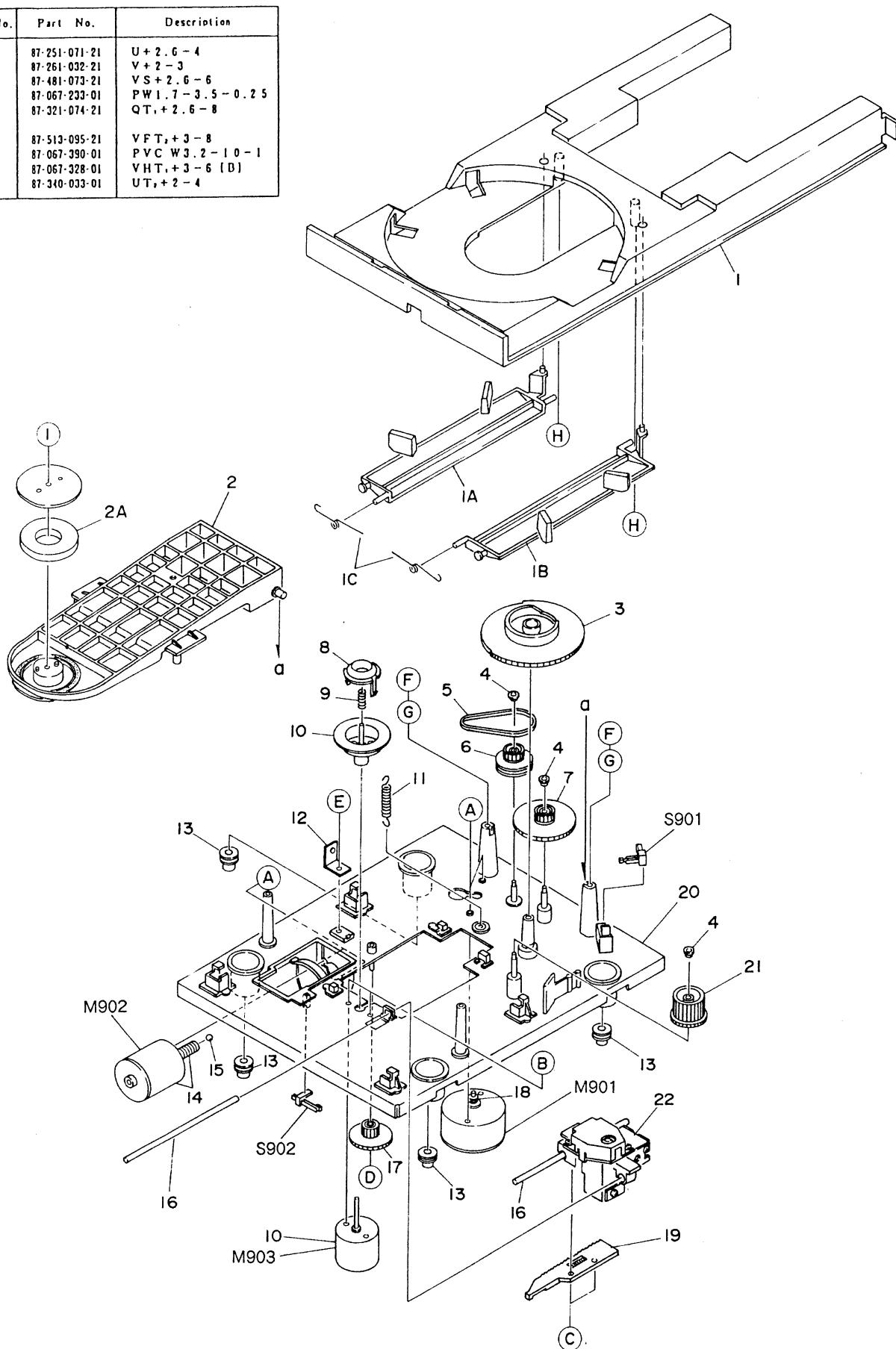


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
1-1		*09-049-362-010	CABINET FRONT ASSY (H,HJ,C,G ONLY) (M55,M55A)	*	1
1-1		*09-049-363-010	CABINET FRONT ASSY (U ONLY)(M55)	*	1
1-1		*09-047-372-010	CABINET FRONT ASSY (Y,YJ ONLY) (M88,M88A)	*	1
1-1		*09-047-373-010	CABINET FRONT ASSY (YU ONLY)(M88)	*	1
1-2		*84-740-002-119	JOINT CD	*	1
1-3		*84-740-009-019	PUSH-BUTTON,POWER	*	1
1-4		*81-715-028-019	KNOB,SLIDE (2)(M88,M88A)	1	1
1-5		*84-732-009-010	SHEET,FILTER	1	1
1-6		--	CHASSIS,AMP.	1	1
1-7		*84-732-204-019	HOLDER,PCB 1	1	1
1-8		*87-055-057-010	FOOT B		4
1-9		*82-785-259-010	HOLDER,PCB C		2
1-10		*84-740-205-019	HOLDER,CUSHION R	*	2
1-11		*84-740-203-019	HOLDER,CUSHION	*	2
1-12		*84-740-202-019	HOLDER,PCB 2	*	2
1-13		*84-719-021-010	SHEET PU		1
1-14		*84-740-204-010	SCREW CUSHION	*	4
1-15		*84-740-003-010	CABINET STEEL	*	1
1-16		*84-741-035-010	CUSHION S 30-40-3	1	1
1-17		*82-790-226-019	G CUSHION 10-10-10	MX-70	2
1-18		*84-740-014-110	PANEL,REAR (H ONLY)(M55,M55A)	*	1
1-18		*84-740-031-010	PANEL,REAR (HJ ONLY)(M55)	*	1
1-18		*84-740-017-010	PANEL,REAR (U ONLY)(M55)	*	1
1-18		*84-740-021-010	PANEL,REAR (C ONLY)(M55)	*	1
1-18		*84-740-032-010	PANEL,REAR (G ONLY)(M55)	*	1
1-18		*84-740-022-110	PANEL,REAR (Y ONLY)(M88,M88A)	*	1
1-18		*84-740-018-010	PANEL,REAR (YU ONLY)(M88)	*	1
1-18		*84-740-024-110	PANEL,REAR (YJ ONLY)(M88,M88A)	*	1
1-19		*82-114-215-010	BUSHING CORD 13P(M88,M88A)	1	1
1-20		*87-085-184-010	CORD BUSHING D (M55,M55A)	1	1
1-21		*87-034-732-010	AC CORD (H,HJ ONLY)(M55,M55A)	1	1
1-21		*87-034-730-010	AC CORD (U,C ONLY)(M55)	1	1
1-21		*87-034-735-010	AC CORD (G ONLY)(M55)	1	1
1-22		*87-084-063-019	RIVET NYLON 3-5.5 (H,HJ ONLY) (M55,M55A)	2	2
1-23		*84-740-222-019	G CUSHION 15-15-8.5 (EXCEPT U,YU)	*	3
1-23		*84-740-223-010	G CUSHION 15-15-8.5 (U,YU ONLY)	*	3

EXPLODED VIEW-2 (Cannot handle 8cm CD)

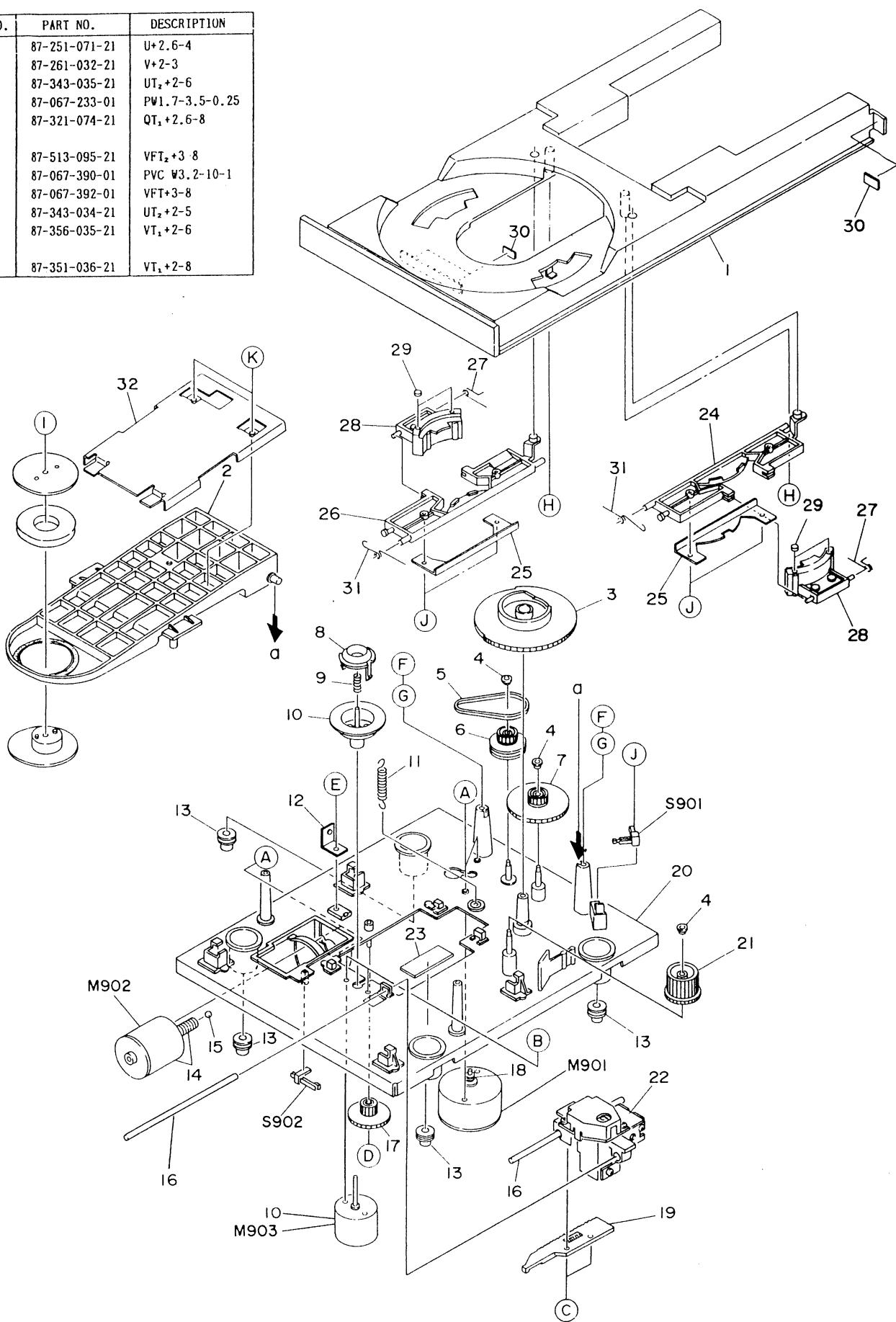
Ref. No.	Part No.	Description
A	87-251-071-21	U + 2 . G - 4
B	87-261-032-21	V + 2 - 3
C	87-481-073-21	V S + 2 . G - 6
D	87-067-233-01	P W I . 7 - 3 . 5 - 0 . 2 5
E	87-321-074-21	Q T , + 2 . G - 8
F	87-513-095-21	V F T , + 3 - 8
G	87-067-390-01	P V C W 3 . 2 - 1 0 - 1
H	87-067-328-01	V H T , + 3 - 6 [D]
I	87-340-033-01	U T , + 2 - 4



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
2-1		*84-732-014-110	TRAY ASSY		1
2-1A		*86-531-003-110	DISC STAND L		1
2-1B		*86-531-004-110	DISC STAND R		1
2-1C		*86-531-220-110	T-SPRING, TRAY		2
2-2		*86-531-221-310	DISC HOLDER ASSY		1
2-2A		*86-531-219-010	MAGNET, CRAMPPER		1
2-3		86-531-205-010	GEAR, LOAD CHUCK		1
2-4		*86-531-230-010	STOPPER, GEAR		3
2-5		86-531-227-010	BELT 1.4-22.7		1
2-6		86-531-234-010	GEAR, RELAY PULLEY		1
2-7		86-531-207-010	GEAR, RELAY		1
2-8		*86-531-225-010	SLIDE BUSH		1
2-9		*86-531-224-010	C-SPRING, TURNTABLE		1
2-10		09-047-238-010	SPINDLE MOTRO ASSY (TURN TABLE)	*	1
2-11		*86-531-209-010	E-SPRING, DISC HOLDER		1
2-12		*84-711-270-010	P-SPRING, TRAY ASSY	DX-1200	1
2-13		*86-531-232-010	G CUSHION, MECHANISM		4
2-14		09-047-237-010	CARRIER MOTOR ASSY (WORM GEAR)	*	1
2-15		*87-073-006-010	STEEL BALL 3		1
2-16		*86-531-228-010	ROD, SLIDE		2
2-17		*86-531-214-010	WORM WHEEL, CARRIER A		1
2-18		84-127-206-010	MOTOR PULLEY S	LX-110	1
2-19		86-531-237-110	RACK GEAR ASSY, CARRIER N		1
2-20		86-531-201-210	MECHANISM CHASSIS ASSY		1
2-21		86-531-206-010	GEAR, TRAY LOAD		1
2-22		87-046-298-010	DAD PICK UP SN		1

EXPLODED VIEW-3 (Can handle 8cm CD)

REF. NO.	PART NO.	DESCRIPTION
A	87-251-071-21	U+2.6-4
B	87-261-032-21	V+2-3
C	87-343-035-21	UT _z +2-6
D	87-067-233-01	PW1.7-3.5-0.25
E	87-321-074-21	QT ₁ +2.6-8
F	87-513-095-21	VFT _z +3 8
G	87-067-390-01	PVC W3.2-10-1
H	87-067-392-01	VFT+3-8
I	87-343-034-21	UT _z +2-5
J	87-356-035-21	VT ₁ +2-6
K	87-351-036-21	VT ₁ +2-8



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
3-1		★84-732-012-21K	TRAY		1
3-2		★86-531-221-410	DISC HOLDER ASSY B		1
3-3		83-531-205-010	GEAR, LOAD CHUCK		1
3-4		★86-531-230-010	STOPPER, GEAR		3
3-5		86-531-227-110	BELT 1.4-22.7		1
3-6		86-531-234-010	GEAR, RELAY PULLEY		1
3-7		86-531-207-010	GEAR, RELAY		1
3-8		★86-531-225-010	SLIDE BUSH		1
3-9		★86-531-224-019	C-SPRING, TURN TABLE		1
3-10		09-047-238-010	SPINDLE MOTOR ASSY (TURN TABLE)	*	1
3-11		★86-531-209-219	E-SPRING, DISC HOLDER		1
3-12		★84-711-270-110	P-SPRING, TRAY ASSY	DX-1200	1
3-13		★86-531-232-010	G CUSHION, MECHANISM		4
3-14		09-047-237-010	CARRIER MOTOR ASSY (WORM GEAR)	*	1
3-15		★87-073-006-010	STEEL BALL 3		1
3-16		★86-531-228-010	ROD, SLIDE		2
3-17		★86-531-214-010	WORM WHEEL, CARRIER A		1
3-18		★84-127-206-010	MOTOR PULLEY S	LX-110	1
3-19		★86-531-237-110	RACK ASSY N		1
3-20		★86-531-201-310	MECHANISM CHASSIS ASSY		1
3-21		★86-531-206-010	GEAR, TRAY LOAD		1
3-22		★87-046-298-010	DAD PICK UP SN		1
3-23		★81-518-238-010	G CUSHION 15-20-2	CS-W330	1
3-24		★84-740-212-210	DISC STAND R		1
3-25		★84-740-213-110	HOLDER, STAND		2
3-26		★84-740-211-210	DISC STAND L		1
3-27		★84-740-218-110	T-SPRING, STAND		2
3-28		★84-740-210-210	DISC STAND		2
3-29		★84-740-215-010	DAMPER 3		4
3-30		★84-700-313-010	G CUSHION, EJECT		3
3-31		★86-531-220-210	T-SPRING, TRAY		2
3-32		★84-740-216-010	HOLDER, DISC		1

■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
1		★84-740-901-019	INSTRUCTION BOOKLET	*	1
2		★87-032-845-019	SIEMENS PLUG (H, HJ ONLY)		1
3		★87-034-978-010	CW-254BSK (DX-M55 ONLY)		1